Figure 3. Mature and immature flowers and immature pods (fruits) of *Phaseolus uleanus.*

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Scientific Note

NEST CONSTRUCTION PLASTICITY IN *OSMIA RIBIFLORIS BIEDERMANNII* MICHENER (HYMENOPTERA: MEGACHILIDAE)

Cavity-nesting wasps and bees use a variety of materials in the construction of cell partitions and nest plugs (Malyshev, S. I. 1935. Eos, 11: 210–309; Linsley, E. G. 1958. Hilgardia, 27: 543–599; Krombein, K. V. 1967. Trap-Nesting Wasps and Bees. Smithsonian Press, Washington, D.C.). The choice of materials is ordinarily species specific and usually constant (numerous individual species accounts). Here, I report on the use of a new material in the construction of cell partitions and nest plugs in the bee *Osmia ribifloris beidermannii* Michener. This use was not from an isolated nest, but from several nests and from two different nesting seasons.

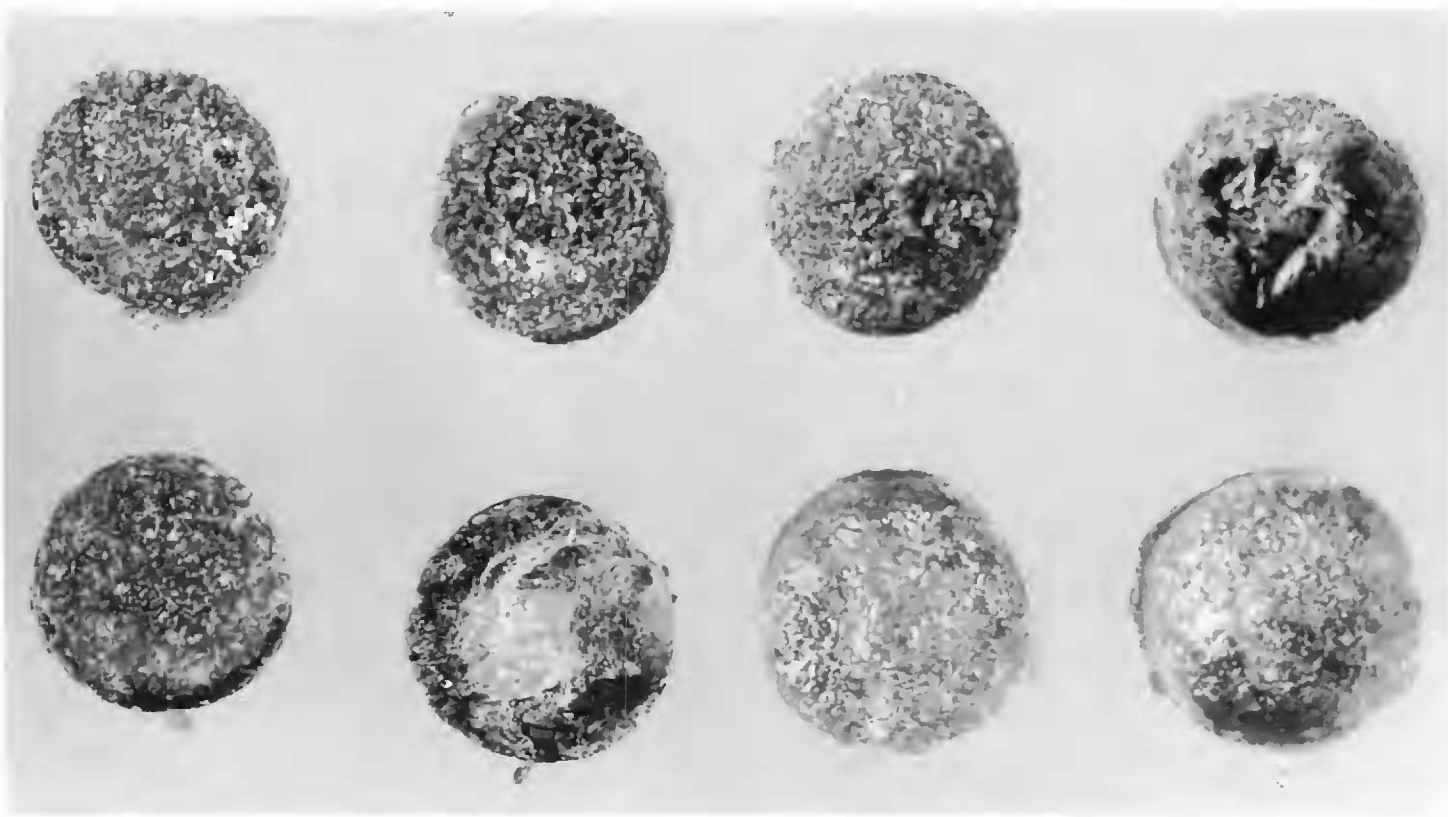

Figure 1. Cell partitions from *Osmia ribifloris biedermannii* nests. Top row are masticated leaf material partitions (most likely *Taraxacum officinale* leaves) from a 7 mm nest and the bottom row shows the inner most partition of masticated leaf (left), the next partition with threshold of masticated leaf but filled with pine resin, and two complete resin partitions from outer cells of the nest.

Osmia r. biedermannii uses masticated leaf material in cell partition and nest plug construction, most likely dandelion (*Taraxacum officinale* Wiggers) in field populations and *Oenothera hookeri* T. & G. in a greenhouse population (Rust, R. W. 1986. J. Kansas Entomol. Soc., 59: 89–94). Trap-nests (pine blocks 1.9 × 1.9 × 15 cm and drilled with 5–9 mm holes) from Reno, Nevada from 1990 (32), 1991 (75) and 1992 (23) contained nests (3 or 9.4% in 1990, 6 or 8.0% in 1991 and 3 or 30% in 1992) in which the bee had used pine resin in both partition and nest plug construction (Fig. 1). The resin partitions were the same thickness as those of masticated leaf from similar diameter holes. However, they were statistically heavier ($t = 13.56$, df = 12, $P > 0.001$, masticated leaf mean 17.8 ± 3.5 mg (SD) and resin mean 55.2 ± 6.0 mg) in 7 mm diameter holes. Nest plugs were also heavier (109.8 to 29.2 mg) in the resin nests of similar diameter. All nests in which resin was substituted for masticated plant material were from trap-nest bundles attached to pine trees (*Pinus* spp.). Also, the inner most partitions were of masticated plant material with the resin partitions and plugs completing the with the resin partitions and plugs completing the nest structure (Fig. 1).

The appearance of resin in partition and plug construction in a nest could be considered an error or mistake by one individual. However, its appearance in several nests and in several different nesting seasons suggests that the ability to substitute construction materials is a behavioral plasticity, at least in the population of *O. r. biedermannii* from the Reno, Nevada area. Because all nests were opened in the laboratory, it is not known if the progeny in resin nests can effectively chew through the resin partitions and plugs during their spring emergence.

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